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ABSTRACT

This monograph presents a synthesis of the literature on the educational tools and procedures used with students who have severe intellectual disabilities. The review focuses on how: (1) the goals of education for students with severe intellectual disabilities are consistent with the educational goals of all students; (2) current school reform recommendations are often inconsistent with procedures that are effective for students with severe intellectual disabilities; and (3) the need exists for curricular and organizational tools to accommodate these students within the regular school. Emphasis is on strategies effectively used with this population. Specific sections address: the goals of education; strategies for restructuring schools; strategies related to effective staff roles; strategies related to curriculum; strategies related to instructional delivery; strategies for behavioral support; and strategies for social inclusion. (Contains approximately 225 references.) (DB)

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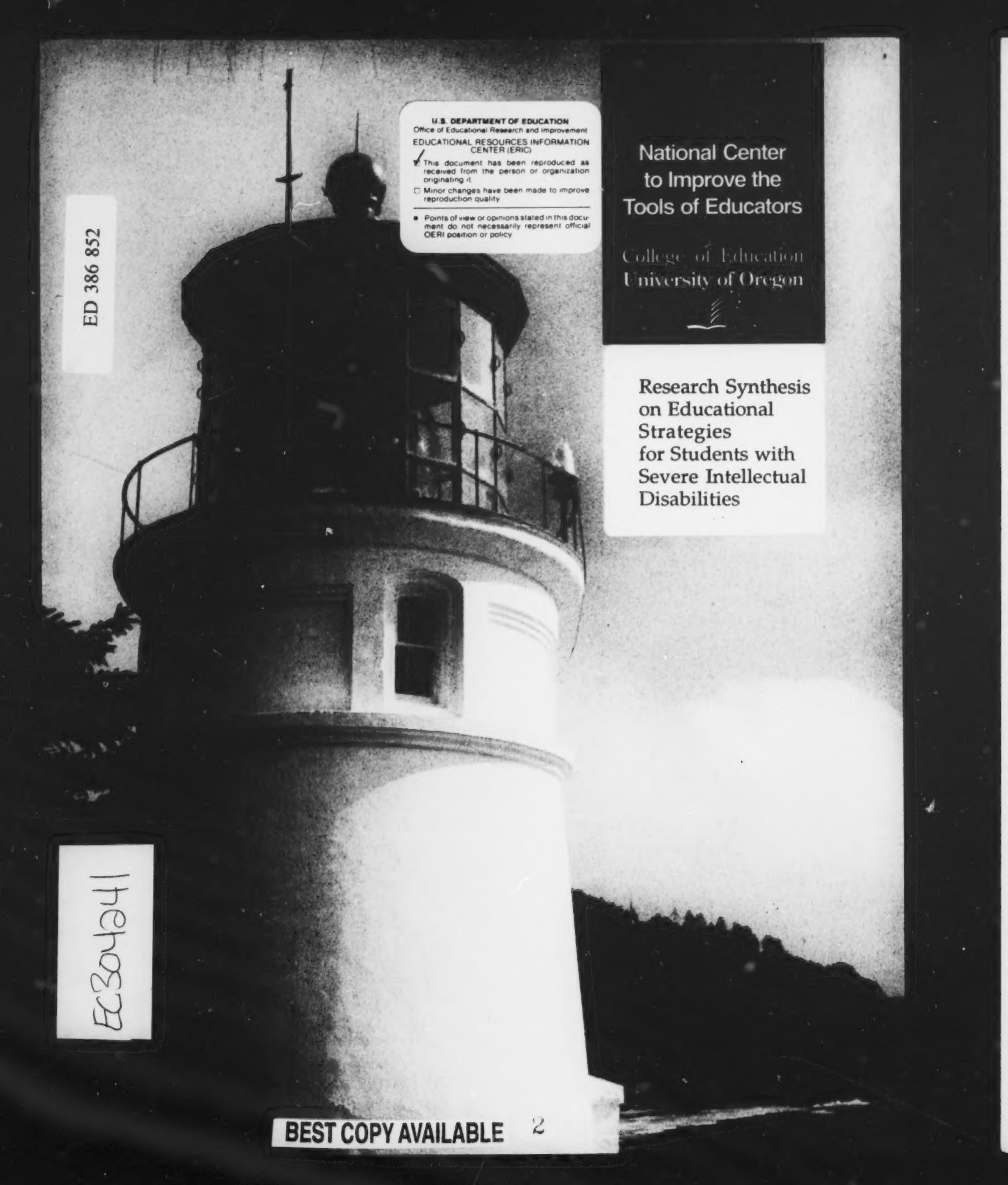

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Research Synthesis on Educational Strategies for Students with Severe Intellectual Disabilities

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Research Synthesis on Educational Strategies for Students with Severe Intellectual Disabilities

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Running head: EDUCATIONAL TOOLS

Educational Strategies for Students with Severe Intellectual Disabilities

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Educational Strategies for Students With Severe Intellectual Disabilities

This chapter provides a synthesis of the educational tools and procedures used with students who have severe intellectual disabilities. Students with severe intellectual disabilities comprise the one percent of students who have the most difficulty learning. They are students who learn slowly, do not generalize well, and often have medical problems that complicate effective education (Meyer, Peck, & Brown, 1991). Traditional psychometric tests identify these students as having IQs of 45 or below. They are students who have not succeeded in traditional schools, but who are stepping forward to claim a role in the "schools of tomorrow." As today's schools redesign their curriculum, internal structure, and instructional procedures, students with severe intellectual disabilities will be part of the equation. Our goal in this chapter is to emphasize how (a) the goals of education for students with severe intellectual disabilities are consistent with the goals of all students, (b) the current school reform recommendations often are consistent with procedures that are effective for students with severe intellectual disabilities, and (c) a need exists for curricular and organizational tools to accommodate students with severe intellectual disabilities within the regular school. A central purpose of the chapter is to suggest guidelines for how education should be constructed to meet the needs of students with severe disabilities.

The Goals of Education

Across the country school districts, state departments of education, and national leaders are defining and redefining the fundamental goals that should drive our education system (Sailor, Gee, & Karasoff, 1993; U.S. Department of Education, 1991). For several generations the assumption has been that the goals of education for students with severe disabilities were qualitatively different from the rest of the educational system (Meyer et al., 1991). The current discussion about goals suggests this is not the case. Students with severe intellectual disabilities share many of the same educational expectations as their non-disabled peers.

Students with severe intellectual disabilities and their families expect the education system to provide each student with at least seven outcomes:

1. Communication skills that will enable performance of daily activities, employment and social interaction.
2. Academic skills needed for maximal independence and employment in a complex world.
3. Personal management skills needed for maximal independence in daily life.
4. Socialization into the current culture.
5. Maintenance of health and safety while in school.
6. Social networks that result in the delivery and receiving of social support.
7. An adult role at graduation; a job, a placement in on-going education, or another role that links the student with a productive and positive future.

These expectations meld well with the expanding range of goals that today's schools are being asked to meet (c.f. U. S. Department of Education, 1991). Schools today are no longer

a place to just gather "information," but a place to become skillful. Schools are expected to provide students with the foundation they will need to succeed in an adult world.

Assumptions About Current and Future Schools

Schools are changing. They are changing in response to expanding demands, a growing diversity of students, fiscal pressure, and improved educational strategies (Sailor et al., 1993). To make recommendations about educational strategies we must specify our assumptions about how schools will be changing.

Increasing student diversity. We anticipate that schools will be more diverse than they have been in the past. This is a trend that has been occurring since schools were first opened (only for white boys). As girls gained access to education, and then a growing population of non-English speaking students entered schools, there has been an ever widening diversity (Tye, 1992). Today the cultural diversity in schools is increasing at a tremendous pace. Successful schools must develop the flexibility to adapt to the demands of high diversity. Students with disabilities are just one piece of the diversity puzzle now challenging our students. The response to increased student diversity is forcing changes in how education is delivered and in the tools needed to educate effectively. In addition to the changing demands and expectations schools face, at least four structural changes are affecting the kinds of educational tools that are needed: Teacher Teams, Student Grouping, Instructional Delivery, and Curriculum.

Teacher teams. Teachers are increasingly working in teams. The era when a teacher had her classroom and 30 students is ending. The trend is for teachers to work in teams with larger class obligations, or to collaborate with teaching assistants and related services staff

who both provide additional support and require additional coordination. Teachers facing greater classroom diversity are collaborating with resource specialists who provide guidance and support around curriculum planning, behavioral concerns, physical disabilities, and instructional coordination. This creates the need for better tools to facilitate team meetings, multi-team decision making, and effective resource allocation. If the cost of collaboration (meetings, planning time, social interaction) outstrips the benefits, then the quality of education will suffer.

Student groupings. Schools will adjust to increased diversity not only through increased collaboration among teachers, but through changes in the way students are placed and grouped. Low student diversity made it feasible to place students in ability groups. Increased diversity makes this more difficult. There simply are too many groups: cultural groups, English proficiency groups, learning ability groups, etc. The result is that students with a wide range of abilities and talents will be in the same class, and teachers will face the challenge not of teaching 30 students who fall in three ability levels, but of teaching 32 very different students who represent eight to ten distinct ability levels. The educational tools for these classrooms must provide individualization within heterogeneous student groupings. This change may be among the most challenging for the current system, and have the most relevance for the development of new educational tools.

Instructional delivery. Another major change that will affect educational strategies is the shift in today's schools away from traditional, lecture-driven education. This is not a new trend, but it is far more pervasive than in the past, and is driven as much by new challenges facing teachers as by a belief that alternative formats will improve.

Students are spending less time in large groups receiving lectures and directions and more time in small group instruction with 3-5 students of varying skills. The students are likely to be focused on a common activity, but they will be addressing different instructional objectives within that activity. Teaching will rely more on concepts delivered in the context of functional events. Students will spend more time working in concert and less time working alone.

Curriculum. The curriculum in our schools is an item of continuous debate. The U. S. Department of Education (1991) agenda is shaping ever increasing discussions about what should be taught. This debate clearly has powerful implications for the construction of educational strategies. Earlier chapters of this text have identified the importance of organizing and sequencing information to improve learning. This attention to the design of the curriculum is of equal importance for students with severe disabilities. Given that they will have more difficulty learning, and will learn less information than their peers, it is imperative that the material they are taught is practical, generalizable, and efficiently presented. The message is that curriculum design is more than the selection of instructional content, it is the organization of that content to promote learning. The efficient use of instructional time, and the efficient design of instruction is of greatest importance for those students who have the greatest difficulty learning.

Integrated approaches to the delivery of special education. Three terms -- integration, mainstreaming, and inclusion --with overlapping meanings, describe less restrictive approaches for delivering special education services. As applied to school environments, there are many distinctions between these approaches. In *inclusive schools*, students with special education

labels attend the local school suited to their chronological age and are assigned to general education classrooms with nondisabled peers (Janney, Snell et al., in press a). Individualized services and supports "follow the child" and are delivered by means of a team approach. The special education teacher spearheads this effort and coordinates other educators who are involved; these services and supports may include adapted curricula, learning goals and objectives, modified materials, technological supports, and personal assistance (Janney et al., in press a). The term "*integrated special education*" refers as well to the attendance of students with disabilities in general education classes where they receive individualized special education supports and services, though students may not be enrolled in their neighborhood school and are likely to attend special education classrooms or resource room part of the day. Students who are *mainsteamed* typically have milder disabilities, may or may not attend their neighborhood school, but are expected to participate in general education; mainstreamed students may receive extra assistance with some skills or may access the curriculum in different ways such as by braille or tape recordings (Janney et al., in press a). One assumption of mainstreaming has been that students need to "be ready for it," that is, students must have the ability to keep up with others in the class (Rogers, 1993).

The traditional practice of clustering students in classrooms by disability label is based on the assumptions that (a) students with similar labels are more alike and can be taught in similar ways; and (b) specialized training in a disability category is necessary to teach students with that label. Special education placement often has been synonomous with the separation of students with disabilities from typical peers; recently, these practices have been cited for

their discriminatory effects (Cook, 1991; Lipsky & Gartner, 1989; Oberti v. Clementon, 1993).

In many inclusive school models, preschoolers requiring special education services attend the preschool or day care program their families prefer (or a publically funded, integrated preschool setting such as Head Start or pre-kindergarten), and special education services and supports are delivered to them in that setting. Elementary-aged students with disabilities are enrolled in the grade at their neighborhood school that suits their chronological age and are members of a particular class; however, in schools using multi-age groupings, class assignments may be more flexible. When they are of middle and high school age, their actual enrollment in specific courses is chosen based upon their individual needs and abilities, their preferences and those of their families', the choices offered in the school, and the school's capacity for supplying support. This procedure for selecting courses is quite similar to that used by typical students of the same ages, though more steps are involved (e.g, assessment of preferences and needs, adaptation of course activities and requirements, identifying and scheduling supports). For example, it is often appropriate for older students with more severe disabilities to spend some of their learning time in the community so the learning conditions for the skills are realistic (e.g., learning to shop and perform a job). Most suggest that students with severe disabilities will spend more time away from the school campus as they grow older, though with care taken to support and extend peer relationships (Sailor et al., 1989; Snell & Brown, 1993). Following graduation after 12th grade, these students may elect to enroll in a post high school program situated at a community college or in a

vocational training setting among nondisabled peers, where they will continue to receive individualized special education services until their 22nd birthday.

Research support. The research basis for inclusion and integration of students with more severe disabilities has expanded over the past decade but leaves many issues unanswered. Generally, there is agreement that preschoolers across a range of disabilities (Buyssee & Bailey, 1993) and older students with more severe disabilities (Cole & Meyer, 1991) demonstrate more improvements in social and behavioral outcomes when they are enrolled in integrated school settings with special education services than when they are enrolled in segregated school settings. However, developmental outcomes have not been found to differ when these groups are compared (Buyssee & Bailey, 1993; Cole & Meyer, 1991; Cole, Mills, Dale, & Jenkins, 1991). Research on the procedures for implementing inclusive programs with collaborative teaming is scant, thus making practitioners more reliant on case studies of "successful" inclusive programs.

The quality of the educational setting apart from the service delivery model will have effects on students with disabilities, on peers and classroom culture, and on the perspectives of teachers. Current research generally has not adequately controlled for, or even measured, the quality of the educational setting. The movement of mainstreaming students with mild mental retardation in the late 1970s involved only the administrative changes of moving students from self-contained classrooms into mainstreamed classes. The expectations educators had for these moves -- that they "would do no worse ... than in self-contained classes" (Gottlieb, 1981, p. 124)-- were confirmed; Gottlieb's findings also showed that these unsupported students did not do better. Understanding the nature of the changes and supports

that promote enduring conditions for growth and learning in integrated students with severe disabilities as well as in underachieving classroom peers are the pertinent and unanswered questions of today's integration movement (Fullan, 1991; Janney, Snell, Beers, & Raynes, in press b; Skrtic, 1991).

Schools are changing. They are changing in part due to an accurate national perception that they are not meeting the needs of our students, in part due to a rise in the diversity of students who are arriving each fall, and in part due to fiscal constraints that are demanding increased productivity. The changes that are happening will be positive only if we can provide teachers and administrators with effective educational strategies. The remaining pages of this chapter focus on the specific strategies (and guidelines for new strategies) that we believe will be of greatest importance if students with severe disabilities are to succeed in regular schools.

Strategies for Restructuring Schools

Effective educational strategies for students with severe disabilities will involve much more than attention to strategies used only in the classroom. A central role will be played by strategies for restructuring schools. The central theme is how schools can be structured to include all students. Historically, students with severe disabilities have been placed in settings outside the regular school context (Danielson & Bellamy, 1989; Davis, 1992; Smull & Bellamy, 1990).

A recent report from The Arc (Davis, 1992) revealed that during the 1989-90 school year fewer than 7% of students with mental retardation obtained their education in general education classrooms. Furthermore, Davis reported that 12% of students with mental

retardation were placed in separate schools for special education, a practice that was twice as frequent among those with mental retardation as among all other students with disabilities. In the schools of tomorrow, these students will be in the regular school building and in the regular classroom. If we are to avoid the failures that prompted segregated placements, new strategies will be needed for organizing how education is delivered.

Strategies for System-wide Organization

The school structure in most districts consists of two separate systems -- general and special education, each with a separate identity, separate staff, supervision systems, and management procedures. McLaughlin and Warren (1992) describe two alternate school organization options, both of which are able to respond more effectively to the diverse needs of students in today's schools, and which assume supported enrollment in neighborhood schools: The Unified System and the Inclusive System. As described by McLaughlin and Warren (1992), the Unified System represents a more extensive restructuring approach, while the Inclusive or Heterogeneous school option involves less change because it does not require a blending of all programs.

Unified System. The "Unified School" is organized around services, not programs, for the purpose of responding more effectively to students' and families' diverse needs. School systems implementing this option centralize all categorical program accounts such as special education, Chapter I, ESL, etc., but grant buildings flexible use of funds which fosters site-based management and collaborative planning. Support services are offered in the classroom without having to establish students' eligibility; a non-categorical strategy much like 20/20 analysis recently described by Reynolds, Setlin, and Wang (1993). Thus funding is based on

the services provided or the total school population, rather than on numbers or types of students with disabilities identified. Procedural safeguards remain in place, but the educational services of special education are not restricted to those individuals. IEPs are based not on services received but on attained outcomes. Unified school systems with their heterogeneous groupings look different from traditional lock-step, age-grade progression schools; instruction and curriculum are more flexible and rely on a more fluid classroom atmosphere where a variety of professionals work with students and together (NASBE, 1992).

Inclusive system. The "Inclusive School" has similarities to the unified school but a blending of programs is not assumed; special education retains a separate categorical special education program administration. Students with disabilities are educated in general education classrooms in their neighborhood schools with specialized services melded into the regular class. School staff work collaboratively and superintendents and principals commit themselves to accept this change in service delivery. Special education funds, including transportation, are consolidated into the school budget as a means of paying for the staff needed to support students in general education. State funding formulae are not based on numbers of students "identified" in inclusive schools, but on services provided. While IEPs are only completed for identified students, other non-identified students also can receive special education services, short-term and less intense, in the general education classroom without eligibility determination. Collaboration between general and special education teachers is the basis for providing special education services to students within the regular class.

Both options, unified and inclusive, differ from typical service delivery models in special education but enable students with disabilities to be educated alongside their nondisabled peers.

School-Based Strategies

In addition to restructuring strategies that apply at the broad "system" level, there are a growing body of educational strategies that may be applied with the school building as the organizational unit.

Collaborative teaming. Collaborative teaming is a strategy which enables educators to pool talents and address the wide range of learning and behavioral challenges that students present, whether or not students have a special education label. The agenda for collaborative teams is "let's figure this out," rather than "who do I refer this student or problem to?" Collaboration involves face-to-face interaction among team members who share their expertise by engaging in the reciprocal roles of expert/teacher and recipient/learner, in order to achieve common, mutually agreed upon goals (Thousand & Villa, 1992). The collaborative process has been identified as "the glue that holds inclusion together," but good team outcomes depend upon members using a collaborative process, having the expertise and information available from team members or from outside sources, implementing team decisions, and evaluating and improving upon outcomes. Special education teachers often become active members of existing school teams with their caseload or responsibilities organized accordingly (Salisbury, Palombaro, & Hollowood, 1993; Schnorr, 1993). Thus, in elementary schools one or more teacher would be assigned to the Kindergarten-First Grade Team (or the 2-3 or 4-5 team) and serve all identified children in those grades; during middle school, certain teachers

would join the 6th grade team or the 6-A team (6B or 6C), while other special education teachers would join the other instructional teams, so each team has special education representation and expertise. In high schools, special education teachers might identify with department teams (science, math, English, vocational), but have their caseload reflect the "math" component of all identified students. The practice of joining existing teams which reflect the organization of the school saves on meeting times because it allows special education staff expertise to be infused into the existing organizational structure and into ongoing staff problem-solving and planning sessions. This practice works best if special education teachers have training across mild and severe disabilities or if teachers with expertise in severe disabilities are available on a predictable but itinerant basis to teams where these students are class members.

Site based inclusion teams. Somewhat like planning teams, inclusion teams are formed within individual schools for two purposes: first, to anticipate problems and prepare for the change to inclusion, and second, once inclusion is underway, they are reformed as teams to resolve issues that arise during the implementation of inclusion. Students may be valuable members of these teams which meet regularly to discuss school issues pertaining to inclusion. Prior to establishing these teams, teachers need to learn the collaborative team process. Principals can provide support by arranging for staff to learn the process, developing school schedules that allow time for teaming, participating on the team, and recognizing team decisions (Snell, Lowman & Canady, 1994).

Visitations to inclusive schools: Seeing is believing. Prior to implementing an inclusive program, school staff need to understand what such programs look like and how the changes

will affect their roles as teachers, related services staff, support staff (counselors, physical education teachers, etc.) and administrators. Staff visit programs that have demonstrated success with inclusion, and have the opportunity to obtain answers to questions about the process of planning and implementing effective education services (Snell, et al., in press).

Horizontal interactions. Piuma and her colleagues (Piuma, Halvorsen, Murray, Beckstead, & Sailor, 1983) first used the term "horizontal interactions" to refer to exchanges between peers at the same level of decision making. In preparation for reform, school systems might bring in a team of a special education teacher and several general education teachers, perhaps accompanied by a parent, a support staff member, or a principal to describe their inclusive school program. Arranging for the team members to talk to their respective peers would constitute a forum for horizontal interactions: principals talk to principals and classroom teachers to classroom teachers, etc. Peer influence is powerful because issues particular to one's distinct role can be addressed in detail with credibility (Snell & Eichner, 1989). Horizontal interactions are valuable to arrange during the implementation stage as well as the planning stage.

Disability/ability awareness. Before students with disabilities are moved into classrooms with their peers, many schools have found that staff and students benefit from participating in sessions which increase their awareness of disabilities. Typically, staff are given such experiences first and then they help plan sessions for students. Often, it is helpful to use simulation activities or direct experience to promote awareness. Some schools have had staff and students use wheelchairs and informally evaluate their schools' accessibility, communicate using augmentative methods, and wear blindfolds, ear plugs, or experience a learning

disability. Having several adults with disabilities participate in these sessions can be an excellent way to get people to address their own fears and prejudices about disabilities.

Individual student planning teams. These teams consist of core members who work regularly with the student (classroom teacher, special education teacher, teaching assistant, parent) and additional members who provide services to the student but on a less frequent basis (e.g., "specials" teachers in elementary schools, related services staff). Principals and older peers (roughly fifth grade and older) may be members of these teams too. The purpose of student planning teams is to problem-solve for an individual student. When a student's support needs are extensive, meetings are more frequent -- for example, weekly for 30 minutes (Schattman, 1992); but meetings often decrease over the year as educators gain skills. Like other collaborative teams, members of individual student planning teams use a collaborative process, cooperative roles, predetermined agendas, and explicit meeting minutes which identify team decisions. When students' support needs are intermittent or limited, team planning will not involve weekly formal meetings, but teachers comparing their observations and perceptions during the school day. Many teachers report that informal collaborative interactions between staff during the school day are more typical than formal scheduled meetings and facilitates the application of decisions made during meetings (Snell, 1993).

Transition planning. During the middle of each school year, teachers need to work with students, their families, and principals to plan for each included student's upcoming year: selecting classes to mesh with IEP goals and needs, selecting and preparing teachers, identifying supports, and anticipating potential problems (Schattman, 1992). Especially during the early stages when schools implement inclusion, teachers need to be given the rationale for

inclusion and some relevant information about potential students and supports and then offered the option of participating or not (Janney, Snell, Beers, & Raynes, in press a; in press b; Snell, Raynes et al., in press). In addition to using teacher volunteers initially, the professional autonomy of those teachers who choose to include a student with extensive disabilities in their classroom must be respected: Teachers must be given some authority to make their own decisions about the way inclusion is implemented in their classroom (Janney, Snell et al., in press a). Arranging for the student to visit the planned classroom may be more important when a school change is required; alternately, teachers often find it valuable to visit the "rising" student in her or his current classroom setting and meet with the student's individual planning team before the transition (Kozleski & Jackson, 1993; Snell, Raynes et al., in press).

Peer support. In addition to having students as members of teams, typical students can contribute in numerous ways to supporting students with disabilities. Informally, classroom and special education teachers have reported that peers' ideas for adapting activities, for promoting learning, for facilitating friendships, and for improving challenging behavior are often insightful (Snell, et al., in press; Villa & Thousand, 1992b). With peer planning groups, teachers elicit students' ideas about specific students in their class: "How can we encourage Nate to play with us?" "How can we help Mary stop hitting others?" and "What can James do when we play kickball?" (Snell, et al., in press). Peer tutoring programs, and buddies or friendship circles are other ways peers can be more formally organized to support students with disabilities (Kaskinen-Chapman, 1993; Snell & Brown, 1993). The outcomes of involving typical peers more actively with their classmates who have support needs appear to

go far beyond obtaining good ideas and assistance; several researchers have reported positive changes in attitude and peer acceptance along with evidence of ample personal growth (Kozleski & Jackson 1993; Peck, Donaldson, & Pezzoli, 1990; York, Vandercook, Macdonald, Heise-Neff, & Caughey, 1992).

Scheduling and grouping strategies are additional strategies that administrators and teachers can use to improve the education of students with severe disabilities.

Scheduling

An assumption for tomorrow's schools is that pullout for related services and specialized instruction will be minimized and replaced with in-class assistance and consultation among classroom teachers and specialists (Snell & Janney, 1993; Snell, et al., in press). Any method for reducing pullout requires careful scheduling of students and staff. Two scheduling tools that have demonstrated success informally are "integrated support," and "parallel scheduling."

Integrated support. Integrated support is an approach in which specialized instruction is integrated into daily routines. Specialty teachers combine their talents with classroom and special education teachers to transport their services to the student either indirectly by teaching and consulting with other staff, or directly by working with the target student alongside peers (Rainforth, York, & Macdonald, 1992). Rainforth and York (1987) suggest that therapists arrange a weekly schedule with blocks of time for grade levels and community-based instruction rather than scheduling by individual students. This approach allows therapists more flexibility in multiple roles of direct therapy, consultation with teachers, team planning, and assessment. Furthermore, by integrating their therapy into the student's daily school routine, therapists (speech and language, occupational, physical, and vision/mobility)

are clearer on student's functional skill needs and have more guarantee that the results of therapy will transfer to everyday use; at the same time, the student's teachers have consultative access to the expertise needed to problem-solve adaptations to classroom activities and to address communication concerns.

Parallel block scheduling. Instead of, or in addition to, integrating pullout services, these same services can be scheduled at one time so they do not take students away from instruction with peers in the classroom or cause class disruption and stigma. With a parallel block approach, the first step taken is to eliminate self-contained separate classrooms and reconfigure these resources into the school's assets (Sailor, Gee, & Karasoff, 1993). Next, a single time for traditional pullout programs (special education, Chapter I, and related services), plus others that do not involve all students and may not address academics (e.g., band at the elementary level, counseling sessions, gifted education, ESL, drug awareness programs like DARE, family life programs) (Snell, Lowman, & Canady, 1994) is arranged on a grade by grade basis (or team by team in middle schools). Parallel block scheduling is one approach that has been applied in many schools, elementary to high school, to reduce pullout services, to create uninterrupted instructional time, to schedule an array of grouping strategies, and to reduce the reliance upon class assignment and grouping based on ability (Canady, 1990; Canady & Reina, 1993; Canady & Rettig, 1992). Besides reducing the problems with pullout, this organizational tool schedules classroom teachers in uninterrupted, daily instructional periods with students in smaller groups. This scheduling approach has been applied only informally to schools practicing integration and inclusion (Snell, et al., in press) and will require evaluation before it is adapted widescale. With this approach, pullout

programs are scheduled to occur during a specific time when students are organized into larger, multiple class groups with a teacher other than the classroom teacher for extension activities; at this time, students may also use the library and the computer center with individualized software, so attending alternate programs becomes ordinary. This scheduling approach may be most effective when combined with integrated therapy and special education supports and collaborative teaming, so that special education, Chapter I, and therapy staff also are scheduled to provide instructional supports when students are back with their teachers in the general education classroom.

Grouping Strategies

Over the past decade several heterogeneous grouping strategies have emerged in the literature which offer alternatives to the practice of ability grouping. The research on ability grouping by classroom or within classrooms does not provide solid, longitudinal support for the widespread practice it has had in schools (Dawson, 1987). Instead, the use of a flexible array of grouping practices (e.g., cooperative learning, multi-age grouping, peer and cross-age tutoring) that address the diverse composition of students enrolled in most schools, along with limited use of ability grouping for specific subjects is recommended (Dawson, 1987; Slavin & Stevens, 1991). These heterogeneous grouping approaches are essential to the inclusion of students with disabilities as members of classrooms.

Cooperative learning. In contrast to ability grouping practices, grouping for cooperative learning means that students are taught in diverse or heterogenous groups where they "help one another learn academic material" (Slavin, 1991, p. 177). With this approach, teachers can accommodate instruction to students' individual needs. First, teachers plan group membership

considering students' abilities and interpersonal dynamics and aiming for a balance of both characteristics among group members. Second, teachers adapt the content taught so every student learns something of value; and, finally, they evaluate learning so improvements can address those who are not making gains.

Research on cooperative learning approaches has demonstrated that learning occurs across many age groups and content areas. Furthermore, remedial students (e.g., Chapter I), mainstreamed students with mild and moderate disabilities, and nondisabled group members have made academic gains when placed together in groups (Johnson & Johnson, 1987; Putnam, Rynders, Johnson, & Johnson, 1989; Slavin & Stevens, 1991). Cooperative groups work well with "hands-on" learning activities in science and social studies and when a base teacher has most or all class members present. Special education and Chapter I staff can assist by bringing in supports for group members with special learning needs, though the features of student-to-student support, groups working toward a common goal, and individualized tasks for group members all foster group cooperation and supervision and monitoring of learning may be teachers' primary responsibilities. In other words, the prior planning between specialized staff and the general education teacher is what enables cooperative groups to rely more upon members' own supports. Thus the combination of tools -- cooperative learning and collaborative teaming -- may enable teachers to work together so students with even more diverse learning needs become productive members of cooperative groups. Students with severe disabilities usually will have participation goals that differ from the range of learning goals for their peers. For example, the general targeted subject area may be the same but the concepts will be much simpler or the student's goals will be

completely different from group members with an emphasis on social, movement, and/or communication rather than a grade level subject area (Giangreco & Putnam, 1991).

There is very limited research support for including students with extensive cognitive disabilities in cooperative groups, though Cosden and Haring (1992) and Villa and Thousand (1992b) have suggested some guidelines for research and its application. To be a successful member of a cooperative learning group requires some social skills and the ability to communicate with members. Thus, students with more severe disabilities will need the basic skills of greeting, acknowledging group members, and partially participating in group activities, while those with milder disabilities will need to listen to other members, ask questions, and present their ideas. Along with these group functioning abilities for students with learning needs, typical peers in the group will require skills specific to the included students, such as being able to use a student's augmentative communication system or to assist another student to participate (Cosden & Haring, 1992, p. 68). Partial support for these suggestions was found by Putnam et al., (1989) who showed that adolescents with more extensive cognitive disabilities participated more in groups with their typical peers when peers received instruction in cooperative skills and feedback on their use of these skills.

Strategies Related to Effective Staff Roles

Changes from Traditional Roles

When students with severe disabilities are included in general education classes, the roles and responsibilities of professionals are affected. Both general education teachers and special education teachers experience the most changes, but principals, district administrators, special education paraprofessionals (assistants), and related services staff also experience changes in

their roles. Responsibilities will vary depending upon the extent and method of implementing inclusion and whether students attend their neighborhood school. Some have noted that professional roles blur when a team-based approach replaces a pullout specialized approach to education; as a result of working in teams, teachers learn skills from each other and all instructional staff come to be regarded as teachers instead of as special or general education teachers or speech therapists or psychologists (Giangreco & Putnam, 1991; Snell, et al., in press). At the same time, students are known by their abilities and support needs not by their disability labels.

Classroom teachers. Adding students with severe disabilities to teachers' classrooms means an increase in the class's diversity and the number of staff working with that teacher. Some teachers have found the new student to be less disruptive than the specialists and visitors who accompany the student (Giangreco, Dennis, Cloninger, Edelman, & Schattman, 1993). Teachers initially may experience limited changes in their responsibilities since their first role is to "host" the student having special needs, while special education staff remain in charge of instruction. Over time, teachers assume "ownership" of the students and begin treating the student as a class member, attending to, interacting with, and initiating teaching (Giangreco et al., 1993). Some teachers may learn to use the individualized adaptations special education teachers develop to modify class activities for included students such as changing the input or output modes, or giving more help or fewer problems (Janney & Snell, 1993). Teachers report that with inclusion they work more as a team with special educators to plan and problem-solve approaches for involving these students in social and learning

activities (Giangreco et al., 1993; Janney et al. in press b; Snell, et al., 1994; Snell, et al., in press).

Teachers also have commented on their new responsibility as a model for typical class members (Giangreco et al., 1993; Snell, et al., in press). The classroom teacher "sets the tone" for classmates toward included students (Janney et al. in press b, p. 22). How teachers help students with disabilities feel they belong to the class depends on the grade and class routine, but rests upon the principle of treating them the same as others, specifically this leads to making them part of class activities, socializing with them, hanging up their work with classmates', giving them class announcements to take home, having them in the class picture, calling their name on the daily roll, and teaching classmates how to interact with them (Giangreco et al., 1993; Janney et al. in press b).

Special educators. When special education changes from being a place to being a support service as it does in inclusive schools, special educators find themselves becoming consultants and case managers more than solitary classroom teachers. The characteristics of working cooperatively with other teachers and being flexible are therefore primary. Their responsibilities center upon facilitating the student's meaningful placement in general education and may include: promoting team planning; making adaptations based on the classroom teachers' lesson plans and schedules and monitoring these adaptations; maintaining regular contact with classroom teachers; teaching mixed groups of students in general education; and coordinating related services, volunteers, visitors, and teaching assistants; (Janney et al. in press b; Snell, Lowman et al., 1994). Special education paperwork and IEP meetings continue to be the responsibility of special educators. The more challenging new

responsibilities have been identified as the development of adaptations that suit the student and promote active involvement in general education, and handling the logistics of scheduling and monitoring students placed in classes with peers (Janney et al. in press b; York et al., 1992). During middle, high, and post-high school years, the logistics of coordinating community-based instruction with general education classes adds to the teachers' scheduling responsibilities.

Special education assistants. Like the special education teacher who supervises them, special education assistants will spend most of their time moving about the school, supporting specific students, but assigned to particular classrooms. Their responsibilities include the ability to self-initiate in class activities and interactions with peers and the included student and to promote these interactions; being part of the class team, contributing ideas and observations; and knowing the included students and working well with them, helping them "fit" into the class, but not "hovering" over them (Janney & Snell, 1993; Snell, et al., 1994).

"Specials" teachers. In elementary schools, teachers who teach physical education, music, art, library, computer, and guidance generally serve students from all grades. Also, it is not unusual for teachers to take planning times during these classes and not to follow their students. Frequently, when elementary schools first integrate students out of self-contained classes, they may place students into "specials". At the middle and high school levels, physical education, chorus, home economics, shop, and other less academic classes may be those first selected for integrating students with severe disabilities. When students with disabilities are included in these classes, the special education teacher or assistant may be the person who provides the support, not the classroom teacher (Janney et al., in press b). Not unlike

academic classroom teachers, teachers of "specials" will need individualized methods for adapting instruction and class activities to the student with disabilities; they will need to communicate with included students, to manage problem behavior, and to select relevant skills to encourage and to maintain. To develop these methods, the teacher needs time to consult and collaborate with the special education teacher who serves the student (though an assistant may be involved in lending direct support), and the special education teacher needs to understand the organization and curriculum of the class. When team collaboration allows closer communication between the base or classroom teacher and the teachers of these special classes, consistency of approach is more likely and not entirely dependent upon the special education teacher's effort.

Principals. When special education services are integrated into general education as a support service and pullout special education programs are eliminated, administrative supervision must come from the principal, not simply from special education administrators in central office. Based on interviews with 54 teachers and administrators in schools where students with disabilities were integrated, Janney et al. (in press b) analyzed major themes of responsibilities for principals. Principals were advised to communicate clearly a positive attitude toward the inclusion effort, foster cooperative planning for the changes, keep communication channels open, begin with teachers who volunteer, arrange the needed training and information for staff, provide resources and manage logistics, pace the change and build on success, and grant teachers the autonomy to implement inclusion, while providing them with acknowledgement and gratitude. Others have recommended that principals in inclusive schools: start with teachers who volunteer, foster an atmosphere of supportive community in

the school, building on success, and establish school mission statements and collaborative planning teams (Schattman, 1992; Snell, et al., in press; Solomon, Schaps, Watson, & Battistich, 1992; Villa & Thousand, 1992a; York et al., 1992). Schattman and Benay (1992) emphasize that school administrators will need to arrange master schedules that create meeting time for teams, to hire personnel who are sensitive to the philosophy and the challenge of inclusion, and to write job descriptions that indicate staff roles in a team-based school. These role characteristics are consistent with those identified for principals who are effective at transforming the culture of their schools, a process that also bolsters inclusion. Successful principals were those who took actions that strengthened the school's culture, fostered staff development, engaged in frequent discussions about values, beliefs, and cultural norms, and shared responsibility and power with others (as cited in Fullan, 1991, p. 160-1).

District administrators. School staff have advised that district administrators practicing integration primarily fill the role of providing support to schools along with sensitive leadership that directs but does not dictate (Janney et al., in press b). One example of support was the adoption of a school system mission statement that lends broad support to inclusion (e.g., *all* students can learn useful skills).

Related services staff. The integration of pullout services is not limited to special education but extends as well to the related services of speech therapists, occupational therapists, physical therapists, vision teachers, and adaptive physical education teachers. Their roles include the development of adaptations or equipment to facilitate class participation, encouragement of functional skills and activities, consultation with teachers, and incorporating therapy into planned class activities (Rainforth et al., 1992; Snell, et al., in press; York,

Rainforth, & Giangreco, 1990). In order to support students with disabilities in physical education classes, adaptive PE teachers take on a co-teaching and consultative role with PE teachers similar to the role special education teachers take with classroom teachers (Block, in press; Block & Krebs, 1992).

School psychologists. Traditionally, school psychologists have spent much of their time formally assessing students referred for special education services; their assessment findings often have been pivotal during the identification and placement phases, but characteristically have had little relevance for teaching students. The practices in inclusive programs assume that students with special needs can benefit from being placed in classrooms in neighborhood schools with age peers as long as the needed special services and individualized supports accompany the student. These assumptions are likely to affect the school psychologist's role, making the placement process less dependent on standardized assessment and labeling, though the regulated requirements of periodic assessment will need to be met or modified. Assessment procedures that help define and refine students' support profiles should become the new tools of psychologists in inclusive schools, with assessment broadened to include ecological inventories, functional assessment of behavior problems, and transitional support needed by students and families during the preschool years and during the post-high school move to adult services and jobs (Gaylord-Ross & Browder, 1991; Luckasson et al., 1992, pp. 114-119).

Strategies Related to Curriculum

Curriculum defines the content and outcomes of instruction. It embodies the goals and expected outcomes of the educational process. Curriculum is much more than the commercial

packages or books often used in teaching. It provides a process for defining what students should know and how instructional resources should be invested.

Traditionally there have been three approaches to curriculum development for students with severe disabilities: developmental curriculum, functional curriculum, and ecological curriculum. The developmental approach to curriculum relies on the scope and sequence of normal development. The items in the normal sequence of development are broken down into smaller steps and taught in the developmental order. Many weaknesses have been identified in regards to this model including: a) the developmental sequencing acts as a barrier to learning more functional things; b) students are treated as infants instead of their chronological age; c) a failure to focus on the context in which things are needed; and d) excessive focus on the form rather than the function of the skills being taught (Rainforth et al., 1992; Wilcox & Bellamy, 1982; 1987).

The functional approach to curriculum still uses developmental sequencing but teaches the concepts within age-appropriate materials and typical contexts. There were many curricula developed as a result of this approach that focused on goals such as money management, time management, banking, community sign identification, social skills training and job application skills. There are many commercial materials available (see Browder & Snell, 1993a). These curricula, similar to the developmental approach were developed to be implemented in a self-contained classroom or environment absent of individuals without disabilities. The presumption is students will apply the skill outside of the learning activity. This approach still a) does not ensure that the skills are relevant; b) is sequenced the same for all; c)

continues to emphasize form rather than function; and d) often does not teach in the natural environment (Rainforth et al., 1992; Wilcox and Bellamy, 1987).

The third approach, ecological curriculum, is referenced to the individual and to the environments in which they live and learn. This approach also has been referred to as the community-referenced approach or activity-based approach. The emphasis is on teaching activities that are age-appropriate and based on the individual's immediate and future needs. Tools for using an ecological curriculum approach initially focused on four life domains: domestic/personal management, community, vocational, recreation/leisure (Brown, Branston, et al., 1979). With the recent emphasis on inclusion, a fifth domain, school activities has been added. A noted drawback to the ecological approach is that it requires considerable teacher time to develop a curriculum for each student. A major focus of recent educational tools has been on strategies for maximizing educational quality without increasing the demands on teacher time.

Features of Curriculum Tools

The outcome of any curriculum is that the student be included as a member of their community, develop social relationships, and gain the skills and knowledge to function in their community. Since there is no clear sequence of what students with severe disabilities should learn, teachers must use principles or frameworks to guide their choices and decisions of what to teach (Ferguson, 1987; Ford et al., 1989). Many such frameworks exist such as the Syracuse Curriculum (Ford et al., 1989), The Activities Catalog (Wilcox & Bellamy, 1987), COACH (Giangreco, Cloninger, & Iverson, 1990), and The Community-based

Curriculum (Falvey, 1986). The framework approach allows teachers to adjust the curriculum to fit the community or environment as well as the students' needs and strengths.

Though each curriculum must be judged for each individual student in his/her own community there is general agreement that these curriculum tools should contain certain features which will be described next.

Referenced to the activities of their peers. Often the list of things that a student with disabilities can learn is long. The challenge is not finding something to teach, but to define the most useful instructional objectives. The activities of same-age peers provides one useful guide for selecting the most valuable objectives. Tools that reference activity patterns of peers encourage opportunities for interaction and inclusion with nondisabled peers. When students of varying skill levels work on similar activities, the teacher can adjust the specific objective for each student more easily. Advanced students may focus on one area within the activity, while other students may be part of the activity while working on a much less complex objective.

Allow teaching in natural environments. Curriculum procedures need to be referenced to natural contexts. The natural environment serves both as a source of curriculum content and a location for training. The need to focus on natural environments is based upon two concepts. One is the mandate from Brown and his colleagues (Brown, Neitupski, & Hamre-Neitupski, 1976) that we focus on the "criterion of ultimate functioning" - that students be able to perform behaviors to the criterion that is demanded by the natural environment. The other concept is generalization. Teaching within the natural context, as opposed to contrived and simulated environments increases the generalizability of the skill (Brown, Ford et al., 1983;

Brown, Nisbet et al., 1983; Hamre-Neitupski, Neitupski, Bates, & Mauer, 1982; Horner, McDonnell, & Bellamy, 1985; Neel & Billingsley, 1989). The natural cues and consequences are in place that will elicit and maintain new skills.

Emphasize the unique learning and performance characteristics of the students. Students with severe disabilities are a very heterogenous group. What is important for a student to learn or how any student will best learn something will not necessarily be the same for the next student. Strategies must be flexible enough to allow for the individualization required to meet the expected outcomes for these students. To provide for the varying needs and strengths of the students the strategies need to encourage the use of multiple strategies for learning a specific activity or skill. Some students will gain the most information if it is provided auditorily; others by seeing it demonstrated. The same is true for demonstrating their knowledge and skill. For example: While working on basic addition, some students may be doing work sheets while others are using number lines with manipulatives.

Support activities that are both socially and behaviorally functional. Curriculum strategies must support the teaching of functional units of behavior - activities. Activities can be functional in two ways, behaviorally or socially. Activities are "socially" functional if a nondisabled persons would need to perform the activity if the student with disabilities did not (Brown, Branston et al., 1979; Brown, Branston-McClean et al., 1979; Falvey, 1986; Wilcox & Bellamy, 1987). Activities are "behaviorally" functional if they result in an outcome that is reinforcing for the student (Horner, Sprague, et al., 1993). In other words, curriculum strategies need to support the teaching of activities that are valued by society (socially functional) and valued by the individual (behaviorally functional).

Teach in skill clusters or within activities. Most individual skills become functional only when they are performed in the context of activities. Teaching students with disabilities within activities teaches the relationship between and among skills and promotes generalization (Bambara, Warren, & Komisar, 1988; Guess & Helmstetter, 1986). In addition, curriculum strategies that teach the needed skills to a student within an activity increase the opportunity to immediately use the skills (Brown et al., 1976; Guess & Helmstetter, 1986; Neel & Billingsley, 1989; Sailor and Guess, 1983; Wilcox and Bellamy, 1982; 1987).

Incorporate individual and family preference and choice. Curriculum strategies should not only be guided by the student's deficits but also by their preferences. Choice and preferences are key motivators for all individuals. The curriculum for students with severe disabilities needs to allow for choices as well as teaching the student how to make choices (Kern, Childs, Dunlap, Clarke, & Falk, in press).

New skills should be useful in the present as well as the future. The skills students are taught must make a difference in their daily life. The curriculum can be restrictive if it only focuses on preparation for future events and ignores any immediate impact. It is unacceptable to justify the selection of an instructional objective only on the fact that it will be useful sometime in the distant future (Wilcox & Bellamy, 1987). Curriculum strategies need to be designed to ensure immediate value and long range utility. Instruction should affect what the student does on a daily basis: where he/she goes; with whom he/she spends time; their access to friends, living, recreation, learning or work options (Horner, Sprague & Flannery, 1993). Focusing on the present also focuses on local competence. Because of the limited amount of

instructional time available the focus on local competence helps in making important choices about what should be taught.

Strategies for Implementing Curriculum

Curriculum strategies for students with severe disabilities typically require the teacher to assess the environment, assess the student, assess the local resources and then integrate this information to meet the strengths and needs of the student. The first place that teachers focus their attention is on the general education curriculum, activities and routines. Students with severe disabilities join the regular school curriculum through one of three approaches: a) no curriculum revision, b) use of multilevel curriculum, c) use curriculum overlapping. (Ferguson, 1987; Giangreco et al., 1990).

No curriculum revision. Many students (especially at younger ages) will be able to participate in school routines or lessons in the same manner as typical students. They will have the same objectives and participate in a similar manner. It may be necessary, however, to change the instructional delivery strategies (eg. cooperative learning) to best present the content in a manner that meets the needs of all the students.

Multilevel instruction. Multilevel instruction involves all students participating in a common activity, but at different levels. The shift is away from only focusing on basic skills, but instead the basic skills within activities (Cohen, 1991). This allows learning of basic as well as higher order thinking skills. The teacher identifies what all students in the lesson will learn when it is completed. At the end of the lesson, all students will have a grasp of the overall concept but each may have mastered different aspects of the content (Collicott, 1991). Multilevel instruction allows for the enrichment of the very able students as well as

modifications for students with more significant disabilities. Adaptations for particular students are based upon the lesson plans for the entire class. The teacher is not creating a different lesson for each student, but rather adapting the typical lesson to make it accessible to each student. The strategies used allow for participation by a large number of students.

Curriculum overlapping. There are some situations where a student can participate within a lesson but may not be expected to understand the main concept of the lesson. In these situations, the student may be working on outcomes related to other curricular domains such as communication, social interaction or choice. For example, the student may pass out and pick up certain materials as part of goals related to greeting others, talking clearly and picking up items.

Strategies Related to Instructional Delivery

In this section, we will offer some guidelines on planning instruction, teaching, and evaluating teaching and learning to students with severe disabilities in integrated school settings. Many of these guidelines are based upon research conducted in separate educational settings -- self-contained classrooms, separate schools, and institutions. The literal translation of these research findings into general education classrooms with teams of teachers may be inappropriate. Thus, we have added guidelines that have demonstrated promise for improving learning of these students in integrated settings.

Planning Guidelines

To plan teaching procedures, it appears useful to follow several preliminary guidelines.

1. Teachers need to understand the student's functional skill needs, preferences, current abilities, recent learning history, and how her or his disabilities may influence these areas.
2. They need to determine how much and what parts of the targeted task the student can perform under defined conditions (e.g., without assistance, task adaptation, and reinforcement or feedback and with defined amounts of these elements).
3. Educators should identify the student's stage of learning for priority objectives (acquisition, maintenance, fluency, or generalization) and tailor instruction accordingly.
4. Teachers will benefit from learning what motivates individual students: their preferences for task/activity, learning conditions (instructor, classmates, location, time, type of assistance, etc.), response mode, etc.

Collaboration and Adaptation Guidelines

Inclusive schools depend upon general and special education teachers working together. While our understanding of how teachers work together to achieve social and academic inclusion of all students is in beginning stages, what we know must be combined with our knowledge about facilitating learning in persons with severe disabilities (developed primarily in separate school settings). First, we have some direction about how teachers come to develop shared agreements around included students. Second, we have some understanding about the adaptations, if needed, which can be made to allow students to "fit" into the classroom environment.

1. The decision to include a specific student in a classroom is often preceded and accompanied by school observations the year before, needed inservice training,

clarification of changes in roles and responsibilities, definition of the needed supports, and a shared understanding of the rationale for inclusion and the means for achieving it (physical and thematic inclusion) (Giangreco et al., 1993; Janney & Snell, 1993; Janney et al, in press b; Snell, Raynes et al., in press; York et al., 1992).

2. Receiving classroom teachers may have a smaller class and additional staff, but do receive special education consultation and support (Raynes, Snell, & Sailor, 1991; Giangreco & Putnam, 1991).

3. The general and special education teachers start their planning with the classroom teacher's lesson plans to determine where, when, and how the student will be included with peers or will participate in alternative activities (Janney & Snell, 1993; Snell & Brown, 1993).

4. Teachers work together and with peers to achieve **physical inclusion**: The student is physically present in the classroom, school, or community near classmates (Janney & Snell, 1993). Physical inclusion may require an adaptation in the setting such as a piece of adaptive equipment so the child can sit at the same height as others, portable medical equipment so ongoing tube feeding can occur unobtrusively during centers time, or a portable communication device so a student can indicate choices in the cafeteria and in P.E.

5. Teachers work together and with peers to achieve **thematic inclusion**: The student uses the same or similar materials to perform the same class activity or a part of it (Janney & Snell, 1993). While more active participation in the class activity seems to be more desirable for included students, passive participation is sometimes used where peers or teachers use prompts and/or the target student is present but less responsive.

Thematic inclusion is often, though not necessarily, achieved through task modification. For example, the learning objective might be simpler, the materials different (size larger), the amount less (fewer spelling words), or the response modified (points to answer rather than speaks aloud). In other cases when teachers feel that the student can understand and respond like peers, the task is not modified (Giangreco & Putnam, 1991).

6. When the activity cannot be modified, thematic inclusion can be addressed by teachers designing a **parallel activity** for the target student: An activity that is different from that performed by peers but is related to the ongoing class activity or subject area. Janney and Snell (1993) found that parallel activities in elementary schools, tended to occur more in the upper grades and with reading and math lessons, addressed functional skills, and were both planned and delivered by special education staff. For example, while some students are taught traditional subtraction, the special education teacher might teach one or two students at their desks to associate coins with prices.

7. Teachers make use of collaborative teaming to problem-solve the "how" of inclusion: What adaptations, modifications, and peer and staff supports will allow the student to be meaningfully included for academic and social activities. Collaboration between staff who work with the student happens both "on the fly" (during transitions, in the cafeteria, etc.) and as well as during scheduled team meetings with a planned agenda and meeting summaries (Janney et al., in press a; in press b; Snell, 1993).

8. Teachers also use collaborative teaming with peers to problem-solve the "how" of inclusion. These meetings can be formally arranged (e.g., MAPS, peer planning, etc.) or spontaneous when peers confront and seek to resolve a barrier to inclusion (Snell & Brown, 1993).

Guidelines for Minimizing Student Errors

Minimizing student errors has been found to maintain student participation in instruction, to increase instructional achievement of new skills, and to improve the performance of skills previously learned (Snell & Brown, 1993). Minimizing errors can occur through manipulation of antecedent events or through the manipulation of consequences. Guidelines for manipulating antecedents to reduce student errors include the following:

1. Use stimulus and response prompts selectively to "get responding going" and keep errors low, but fade prompts so students learn to rely on natural stimuli (Snell & Brown, 1993; Wolery & Gast, 1984).
2. Clearly define the universe of situations across which responding is desired (Becker, Englemann, & Thomas, 1975; Englemann & Carnine, 1982; Kameenui & Simmons, 1990).
3. Select teaching examples and teacher prompts that focus the student's attention on the relevant features of a task (Englemann & Carnine, 1982). Use multiple teaching examples that sample the range of relevant stimulus variation and do not have common irrelevant features (Horner, Bellamy, & Colvin, 1984).

4. Make use of response latencies so teacher prompts do not prevent the student from responding or foster prompt dependency: Allow the student time to respond independently or with less assistance (Snell & Brown, 1993).
5. Fade assistance through constant and progressive time delay to shift stimulus control from teacher prompts to the relevant task stimuli (Snell & Brown, 1993; Wolery, Ault, & Doyle, 1992).
6. Analyze the material to be taught so the student performs 75-80% of teaching trials correctly. Adjust complexity of the task as the student learns (Brown & Snell, 1993a; Snell & Brown, 1993).
7. Consider longer-lasting task adaptations or assists (e.g., prostheses or partial participation) which reduce the cognitive or motoric complexity of tasks but do not compromise the student's performance (Snell & Brown, 1993). Depending upon the students' age, needs, and preferences, academic skills might be bypassed altogether or students might be taught to use a prosthetic device or procedure instead of the academic skill (e.g., a calculator to add prices or rounding-up to avoid counting out exact payment). Other options which require academic skill instruction include the targeting of specific but limited skills in an embedded fashion and teaching generalized skills (Browder & Snell, 1993a).

A second approach to the minimization of errors involves planning and adjusting the consequences to increase student motivation. These strategies might include:

1. Identify and draw upon a range of consequences that are preferred by the student but that are not stigmatizing (e.g., inappropriate to the person's age) or unhealthy.

2. Build choice-making into instruction and school routine as a means of encouraging personal autonomy (Kishi, Teelucksingh, Zollars, Park-Lee, & Meyer, 1988); this practice may reduce the need for repeated reassessment of reinforcers (Mason, McGee, Farmer-Dougan, & Risley, 1989) as well as for externally programmed consequences as the primary means for influencing a student's response rate.
3. Whenever possible, employ consequences that are natural to the situation (supervisor praise, break from work, choice of school task) or pair natural consequences with artificial ones as a transition to fading out artificial consequences.
4. Determine if having the student choose the order of school tasks or the specific task facilitates performance (Brown, 1991).
5. Study the function(s) which behavior problems seem to have for an individual; use this information to select needed skills (e.g., communication signal to seek escape from undesired situations) and to determine motivators (e.g., getting attention, receiving desired objects, having a break, choosing an interesting activity).

Guidelines for focusing student attention on "relevant" features. Learning requires attention to the critical features of the task (Englemann & Carnine, 1982). For students with severe intellectual disabilities it often is much easier to teach the topography of a skill, than it is to teach the student when to perform the skill. The student knows what to do, but not when to do it. Effective instruction requires tools for ensuring that targeted skills come under appropriate stimulus control. Current research suggests that the following guidelines will be important for affective instructional tools.

1. Use attending cues that are quick and easy to give and ensure that students pay attention to the relevant stimulus (Holcombe-Ligon, Wolery & Werts, 1992, p. 15).
2. Use specific attending cues and active attending responses that indicate whether the student is paying attention to the relevant task stimuli (Holcombe-Ligon et al., 1992, p. 19) (e.g., the teacher says the student's name and hands her a coin, then places three photos of priced articles on the table in front of her, asking "Put this with the same price,").
3. Learning can be made more efficient by teaching incidental information in addition to targeted information; the incidental information is inserted into the feedback statement following each learning trial (e.g., "It's a quarter" [target: coin = coin name], "and it's worth 25 cents" [incidental information: coin = value in cents]) (Werts, Wolery, & Holcombe, 1991).
4. Teaching communication skills within everyday, familiar contexts where the student's focus of attention determines the topic for communicating (e.g., wanting an object that is out of reach, needing assistance) and the student's response determines the consequence has been called naturalistic or milieu teaching and holds demonstrated promise for teaching persons with severe disabilities to communicate. A variety of planned prompting procedures (e.g., model, mand-model, and time delay procedures) have been demonstrated effective within milieu teaching (Halle, Baer, & Spradlin, 1981; Hamilton & Snell, in press; Kaiser, 1993).
5. Similarly, when students with severe disabilities are given speech and physical/occupational therapy in an integrated fashion, or during natural opportunities

for movement and speech (Giangreco, 1986) and when practical work and daily living skills are taught in actual work and community settings, learning and skill generalization appears to be better than when instruction takes place in isolated therapy settings or in classrooms using simulations of work or housekeeping (Browder & Snell, 1993b).

6. An approach for promoting generalized skill development, general case instruction, has been demonstrated as effective when teaching a range of practical skills to persons with severe disabilities (e.g., dressing, shopping, using vending machines and soap dispensers). This approach involves the creation of a generic task analysis that works across a defined range of task materials and settings, purposeful selection of the teaching and testing examples so best exemplars -- the ones that sample the widest range of stimulus and response variation -- are taught first, and testing for generalization of learning to the untaught examples (e.g., Horner & Albin, 1988; McDonnell & Horner, 1985; Sprague & Horner, 1984).

Evaluation of learning and improvement of instruction. Teachers need to understand if their instructional efforts result in students acquiring the targeted skills. Simple but reliable evaluation procedures that give teachers this information are as important in teaching as are the careful development of instructional methods. Besides data collected by observing the student perform the target skill under realistic conditions, other evaluative approaches have value for educators. The following strategies can be used:

1. Student performance data collected on targeted tasks or on discrete behaviors, if taken regularly, during training, using reliable observational procedures, and displayed using

standard, graphing methods, supply teachers with a credible basis for assessing student learning (Browder, Demchak, Heller, & King, 1989; Brown & Snell, 1993b; Farlow & Snell, in press; Liberty & Haring, 1990).

2. Additional student data (probe or test data, error data, performance on other skill training, anecdotal comments, medical information such as the frequency of seizures or illnesses, etc.) can be combined with the examination of training data when making decisions about learning progress and program improvement (Farlow, Loyd, & Snell, 1991; Farlow & Snell, in press; Grigg, Snell, & Lloyd, 1989; Horner et al., 1984; Munger, Snell, & Lloyd, 1989; Snell & Lloyd, 1991).

3. Several rule or guideline systems for making decisions about progress and for changing instructional programs are effective for improving instruction for learners with disabilities (Browder et al., 1989; Farlow & Snell, in press; Fuchs, Deno, & Mirkin, 1984; Fuchs & Fuchs, 1987; Haring, Liberty, & White, 1980).

4. Assessing the opinion of peers, teachers, parents, employers, and the students themselves as to their satisfaction with the instruction and their perception of learning and its value, is another approach for evaluation through social validation (Wolf, 1978).

5. Simpler, "user friendly" measurement tools (e.g., assessing the quality of the completed work, weight gain/loss, attendance data, communication logs between home and school) may be valuable ways to assess the success of an instructional program (Meyer & Janney, 1989).

Strategies for Behavioral Support

Problem behaviors are the single most common reason why students with disabilities are excluded from schools (Horner, Diemer, & Brazeau, 1992; Reichle & Light, 1992). This is true regardless of the type or degree of disability a student experiences, or whether they have a disability at all. The increasing proportion of students who are identified as having problem behaviors, and the difficulty schools have coping with these students, attests to a need for structural change in our response to problem behaviors in public schools. Strategies for responding to problem behaviors fall into three broad classes: Assessing or understanding problem behaviors, building support plans, and organizing school-wide systems that promote positive behavior (Sugai & Horner, 1994).

Assessing Problem Behaviors

Problem behaviors for students with severe disabilities range from whining, noncompliance, and refusal to more dangerous behaviors such as stealing, self-injury, aggression, pica and property destruction. High intensity behaviors pose direct safety concerns, while lower intensity problem behaviors disrupt classrooms, and present a consistent and debilitating demand on teacher time/attention. Major advances have occurred in the tools used to conduct a functional assessment of problem behaviors for students with severe disabilities.

Functional assessment is the process of defining what predicts and maintains problem behaviors (Reichle & Wacker, 1993, Sprague & Horner, in press). The assumption is that if we understand when and why problem behaviors occur we will be able to make changes that reduce the likelihood of the problem behavior. The goal is not to remove or eliminate the

students' ability to perform the problem behavior, but to create a modified setting that makes performing the problem behavior irrelevant, inefficient, and/or ineffective (Horner, O'Neill, & Flannery, 1993). Although the basic tenants of functional assessment have been described for nearly thirty years (Baer, Wolf, & Risley, 1968; Bijou, Peterson, & Ault, 1968), only recently have practical tools for conducting functional assessment have been developed and applied in school and community settings. Functional assessment currently can be done in a number of ways, but the basic process is to (a) identify the problem behavior(s), (b) examine the physiological and environmental variables that predict the problem behavior(s), (c) examine the events typically following the problem behavior that maintain repeated occurrence, and (d) obtaining direct observation data to support the hypothesis and conclusions of the analysis.

A number of strategies are available for conducting functional assessment. Initial screening of the problem behaviors can occur through an interview with those people who know the person best (typically the teacher, teaching assistant(s), related services staff and family). Many functional assessment interviews have been proposed (Durand, 1990; Durand & Crimmins, 1987); LaVigna & Donnellan, 1986; O'Neill, Horner, Albin, Storey, & Sprague, 1990; Pyles & Bailey, 1990; Rolider & Van Houten, 1993). The interviews differ in the breadth and specificity of the questions, but the basic goal in each is to identify the group of problem behaviors a student performs and gain an understanding of the environmental and physiological events (e.g. task demands, seizures) that (a) predict the occurrence and nonoccurrence of problem behaviors, and (b) maintain the behavior. The Pyles and Bailey (1990) interview focuses more specifically on physiological variables, and the Durand and Crimmins (1987) interview is focused on the events maintaining the problem behavior. The

remaining tools examine a broad range of physiological and environmental events that may be associated with deviant behaviors.

A second approach for understanding problem behaviors rely on direct observation of the student in the normal course of the day. The teacher marks or records the occurrences of problem behaviors over several days and these data are examined to identify patterns. Bijou et al., (1968), provided the first systematic system for using direct observation to assess the controlling variables of problem behaviors. In their system, the staff write a description of the problem behavior after it occurs, and then record what happened just prior to and just following the problem behavior. The process has been used extensively in applied settings and has produced valuable results. Teachers are able to see that problems are most likely when certain tasks are presented or certain opportunities withheld. This allows the teacher to build "hypotheses" about the behavior (e.g. "the behavior is done to avoid tasks that are difficult for Amy to do").

More recently, variations to natural observation approaches have both added specificity (time of day) and added information about distal events (e.g. a poor nights sleep that happen long before the problem behavior) in an effort to gain a more complete understanding of why and when problem behaviors occur. Touchette, MacDonald, and Langer (1985) provide a variation of Bijou's approach that organized problem behaviors by the hour of the day that they occurred. This allows teachers to examine patterns of behavior across days to see when and where the problem behavior both occurs and does not occur. Carr et al., (1994); Doss and Reichle (1991); Mace, Lalli, Laili, and Shea, (1993); and O'Neill et al., (1990) have developed similar observation tools that are simple, time efficient and practical for teachers

and families to use. Each of these instruments has demonstrated value in identifying events in the environment that affect problem behaviors. Recent evidence indicates that the information from these functional assessment improves the quality of behavior support plans (Carr, 1977; Carr & Carlson, 1993; Carr, Robinson, Taylor, & Carlson, 1990; Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Tuesday-Heathfield, 1992).

A third approach to functional assessment is the systematic manipulation of environmental events. This approach was used impressively by Carr (1977), and has been developed into a structured tool by Iwata and his colleagues (Iwata, Dorsey, Slifer, Bauman, & Richman, 1992; Iwata, Vollmer, Zarcone, & Rodgers, 1993). The basic approach is to observe the student in different situations that are created by the teacher. For example, when the student is alone, is he/she more or less likely to perform the problem behavior? When the problem behavior results in the student getting a break from working, is she/he more likely to perform the problem behavior? When the student is able to obtain attention from the teacher (or peers) when she/he performs the behavior, does it become more likely? When the student is actively engaged in a fun task with no demands, is she/he more or less likely to perform the behavior? Creating these situations and observing what the student does in the different situations gives a powerful understanding of events in the setting that are maintaining the behavior (e.g. why does it occur?). This information is then used to change the setting to reduce the behavior problem. Over the last five years, a set of creative variations on the theme proposed by Iwata have been demonstrated by Carr and Carlson, 1993; Carr, McConnachie, Levin, and Kemp, 1993; Dunlap and Kern-Dunlap (1993); Dunlap et al., (1991); Foster-Johnson, Ferro, and

Dunlap (in press); Mace and Roberts (1993); Northup et al., (1991); and Wacker and Steege (1993).

At present there are many strategies for conducting functional assessment of problem behaviors (Frea, Koegel, & Koegel, 1993). They vary in comprehensiveness, difficulty to implement and precision but they all share a focus on understanding the features of a school that affect the occurrence of problem behaviors. These strategies have proven useful for designing effective support. The challenge now remains to make these strategies more readily available to typical school personnel, and to extend the application of these procedures to problem behaviors of all students (Kern et al., in press). As researchers and clinicians strive to improve functional assessment strategies, we suggest the following guidelines. Functional assessment strategies should:

a. Define the full set of problem behaviors a student performs;
b. Identify those immediate and distal antecedents that predict occurrences and non-occurrence of the problem behaviors;
c. Define a specific hypothesis for what consequences are maintaining the problem behavior;
d. Provide direct observation data to support the analysis;
e. Be directly useful for building behavior support plans, and;
f. Be easy to learn, efficient to use, and accurate.

Strategies for Building Behavior Support Plans

A second set of strategies is needed to transform functional assessment information into practical behavior support plans. These strategies must produce two results. One is that the

behavior support plan be technically sound, and the second is that the plan "fit" (or "match") the people and setting where it is to be used. Too often behavior support plans are combinations of behavioral tricks that are not theoretically consistent (e.g. using time out with a student who performs problem behaviors to escape a situation), or they are technically brilliant but are contextually unacceptable. The people who implement the procedures must not only understand what to do, they must identify the procedures as "doable" given their resources, and "appropriate" given their personal values (Favell & McGimsey, 1993; Lucyshyn & Albin, 1993). There are a tremendous array of guides for the construction of behavior support plans. The most recent models link the principles of behavior analysis with the practical demands of the support environment (Axelrod, Spreat, Berry, & Moyer, 1993; Horner, O'Neill et al., 1993; Reichle & Wacker, 1993).

Among the most elegant demonstrations of building behavior support plans are reported by Carr and Carlson, 1993; and Dunlap et al., (1991). In both reports, comprehensive support plans were constructed after students were observed in real world situations (grocery stores, classrooms). The interventions were both linked to theoretically powerful concepts, and tied to practical features/demands of the instructional settings.

At present, there are models describing important features of support plan development, and a growing number of excellent examples of support plans that have been developed. The need remains, however, for strategies that provide more discrete steps that clinicians can use in the design of effective environments.

School-Wide Systems of Behavioral Support

To date, behavioral support for students with severe disabilities has occurred in a context of individualized instruction. The focus has been on understanding the unique variables that affect one student's behavior, and organizing the setting so it better adapts to the needs of that student. If students with severe disabilities are to be active members of regular schools, teachers will need more than strategies that can be used only with individual students. The need will exist for a balanced array of school-wide procedures that are effective with the vast majority of students, coupled with the more individualized systems for the small number of students with pervasive and/or dangerous problem behaviors. School-wide systems of behavioral support will involve procedures for identifying (a) basic school guidelines for behavior, (b) consistent teacher/staff tactics for promoting positive behavior and responding to problem behaviors, (c) proactive procedures by which small groups of teachers collaborate to preempt problem behaviors, and (d) procedures for responding to problem behaviors before they become ingrained patterns.

No empirically documented strategies have been published that define specific, school-wide procedures. There are many broad recommendations, and a great many general philosophies. Only a few efforts exist, however, where specific guidelines for school-wide systems have been developed and put to empirical test (Colvin, Kameenui, & Sugai, in press; Sugai, 1992). A major need exists for educational strategies that meld our understanding of behavioral support with our understanding of organizational theory. Teachers and administrators need new tools for building school-wide behavior-support strategies that make our schools predictable, proactive and effective for students, teachers and administrative staff.

Strategies for Social Inclusion

Social relationships are important to all of us. The relationships we have with our families, friends and others affect our quality of life. A critical outcome of students being included in "regular" schools and within their communities is the opportunities for the development of rich relationships with others (Falvey, 1986; Meyer & Kishi, 1985; Sailor, 1986; Sailor et al., 1989; Stainback & Stainback, 1985; Voeltz, 1980; Voeltz et al., 1983).

Social relationships have been identified as central to a person's quality of life (Edgerton, 1967; Edgerton & Bercovici, 1976; Forest & Lusthaus, 1989; Landesman, 1988; O'Brien, 1987; Perske, 1988; Sacks, Hirsch, Tierney-Russell & Gaylord-Ross, 1992; Willer & Inagliata, 1981). It is important that the curriculum for students with severe disabilities includes a focus on the development of social support and social inclusion. This will require attention to the indicators of social support and inclusion and the strategies to assess and develop social inclusion.

Indicators of Social Inclusion

The past decades have recognized that social skill training is not enough for students to establish and maintain social relationships. There are four features that appear to be indicators social inclusion: durability and consistency of social interaction; the active participation in getting and giving of social support; the pattern of social activities; and the size and structure of one's social network.

Competence in social interaction. In order to establish and maintain a social network one needs to be competent in social interaction. The student must be a competent communicator and have a repertoire of appropriate social skills.

Most social interaction research focuses upon preschoolers and social skill training (Gaylord-Ross & Haring, 1987). Thus, most often the research has been concerned with the development of strategies to increase the frequency of interactions. There also is a group of investigations on the generalization of these interactions to different settings, people, or responses.

Pattern of social activities. The number of activities, the types of activities and the location of activities is an important indicator of social inclusion. One's pattern of social activities can be an index to a person's social life with implications for method of improvement (Newton, Horner, Lund, Sappington, & Singer, 1989; Ouellette, 1989).

Students who participate in age appropriate activities in settings with non-disabled peers are more likely to have increased social interactions (Hecimovic, Fox, Shores, & Strain, 1985; Odom, McConnell, & McEvoy, 1992). Many students with severe disabilities, even if attending a "typical" school, spend majority of their time within their classroom or participate in school activities as a single group. Both of these limit the opportunities for interaction with others and the establishment of peer contacts and development of relationships.

Active participation in getting and giving social support. Individuals who have social relationships not only interact but also give and get support form each other. Reciprocity is a critical variable in maintaining social interactions as well as maintaining a social network over time. Reciprocity emphasizes that individuals need to both give and get support if the relationship is to last. At this point there is little information on what individuals with disabilities need from those in their networks and how people contribute to others in their networks (Horner, Newton, & Fredericks, 1992).

Size, structure and durability of social network. Social networks are complex in their form, structure, and function. Networks consist of the groups of people with whom a person performs (or has performed) activities, and who are considered important to the individual (Caplan, 1979; Dimatteo & Hayes, 1981; Gottlieb, 1981; Newton et al., 1989). Students with severe disabilities are capable of building social networks (Meyer & Kishi, 1985). Social networks are made up of a variety of people who serve a variety of roles and interact with each other regularly. It is important to note though that the number of members and rate of interaction may vary both within and across social networks. Students with severe disabilities are capable of building their social networks (Meyer & Kishi, 1985).

Strategies to Improve/Enhance Social Support

Though the importance of social inclusion (e.g., social interaction skills, network and support, pattern of activities) has been emphasized within the literature, the technology to measure and improve it is lagging behind. Due to cultural and geographical variations there is no single way to assess or index the status of a student's social inclusion. Yet there appear to be at least four main strategies recommended: a) maximizing social interaction skills; b) minimizing logistical barriers; c) modifying social activity patterns, and d) designing and modifying social contexts.

Maximizing Social Interaction Skills. Interacting with others is a skill that most children learn naturally in their early years (Ostrosky, Kaiser & Odom, 1993). Students with severe disabilities, however, often fail to develop the social skills and social connections that are critical to successful inclusion (Gaylord-Ross & Haring, 1987). Efforts to build social skills have focused either on adult-mediated instruction, or peer-instruction.

Adult meditated instruction. Social interaction skills can be taught directly by adults through the use of prompting and reinforcement (Fredricks et al., 1978; Haring & Lovinger, 1989). This is accomplished by observing the environment in which the student will participate and identify those specific skills that are needed. The target skills should be functional behaviors, those that are likely to result in positive reciprocal reinforcement and allow the person to access less restrictive environments. (Stainback, Stainback, & Hatcher, 1983; Stainback, Stainback, & Strathe, 1983; Whitman, Mecurio, & Caponigri, 1970). Many students with severe disabilities have limited language, but this should not eliminate them from social interaction. There are many reciprocal social interaction skills that can be targeted that do not require language such as sharing, physical affection, compliments, and cooperative activities (Kohler, Strain, Maretsy, & DeCesare, 1990; Odom & Strain, 1984). Another variable that should influence the selection of target behaviors is to identify social interaction skills that will reduce negative social responses or stereotypic behaviors plus are age appropriate (Carr & Durand, 1985; Horner & Budd, 1985; Hunt, Alwell, & Goetz, 1988).

Generalization of the social interactions is important if the skills are to be functional. In order to ensure generalization it is critical to attend to the differences or uniqueness of the social expectations and nuances of the different environments (Brady, McEvoy, Gunter, Shores, & Fox, 1984). Whenever possible, students need to be taught in the environment in which they will use the skills (Calculator, 1988; Calculator & Jorgensen, 1991; Falvey, 1986; Wilcox & Bellamy, 1987). To ensure this, teachers must attend to the stimuli and types of reinforcement used during training (Lancioni, 1982; Stokes, Baer, & Jackson, 1974; Whitman et al., 1970) . The students must be taught to respond to a variety of stimuli including verbal

statements used, persons with whom they interact, and settings in which interactions occur. The teacher needs to sample a range that is diverse enough to capture the variability in the settings the student accesses. This careful sampling will increase the probability of generalization by emphasizing attention to those relevant features of all settings that set the occasion for appropriate responding. The selecting of instructional examples to teach the "general case" has been used with impressive success with academic skills (Englemann & Carnine, 1982; Horner & Albin, 1988), and should be used by teachers to ensure generalization of social interactions.

Peer mediated interactions. Peers with adequate social skills can be taught to successfully mediate interactions with students with disabilities (Odom & Strain, 1984; Strain, Shores, & Timm, 1977). There have been three main approaches to peer mediated interventions: (a) teaching the peer to demonstrate a variety of interactive social behaviors in the presence of the student with disabilities (Brady et al., 1984; Strain, 1977; Timm, Strain, & Eller, 1979); (b) teaching the peers to initiate interactions with the students with disabilities (Odom, Hoyson, Jamieson, & Strain, 1985; Strain, Cooke, Apoloni, 1976); and (c) teaching the peer to prompt and reinforce the student with disabilities (Kohler et al., 1990; Strain & Fox, 1981; Strain, Kerr, & Ragland, 1979). Typically, the peers receive some type of training and then return to the environment to engage the student with disabilities in social interactions.

When skill levels are not too discrepant, a peer without disabilities can demonstrate a response or group of responses for another student (Campbell, 1989). The peers provide motivation as well as "typical" expectations for the student with disabilities. This approach may require some guidance and facilitation from the teacher. One must be careful because

the more structured the situation the less likely the opportunity for natural interactions. This approach also requires that the student with disabilities be able to imitate.

Secondly, peers can be taught to initiate interactions with students with severe disabilities. Except for a study by Odom et al., (1985), the peers have been non-disabled. The non-disabled peers are often taught a variety of social initiation strategies such as sharing, helping, showing affection and taught to persist in interacting with the student with disabilities (Odom & Strain, 1984). Peers also can be taught to prompt and consequate other non-disabled students to interact with students with disabilities (Kohler et al., 1990).

There appears to be some difficulty with generalization of the interaction across non-disabled peers. The student with disabilities often directed their self initiation only toward those cnildren who had offered them "social bids" (Stainback et al., 1983). Therefore it is important that teachers using this strategy implement it across a variety of non-disabled peers.

Lastly, non-disabled peers, similar to adults, can be taught to consequate and prompt specific social skills in students with disabilities (Kohler et al., 1990; Odom et al., 1985; Strain & Fox, 1981; Strain et al., 1977). With this strategy peers are taught about prompting and reinforcement of specific social behaviors. As with the earlier discussion about adult mediated strategies, the teacher needs to focus on ensuring the generalization of the skills by using a variety of peers, a variety of settings and fading to a reinforcement schedule and type similar to the environments in which the student with disabilities will participate.

There are several things to consider when using any of these peer-mediated strategies. Select students without disabilities that exhibit age-appropriate and positive social interaction

behaviors. In addition, students should be paired with others who have common interests, like to be with each other and are likely to approach each other in naturally occurring situations (Ostrosky et al., 1993).

It has been demonstrated that when the prompting and reinforcement was no longer available the student with disabilities did not interact (Gaylord-Ross & Haring, 1987; Odom et al., 1985). The students became very dependent on the prompting delivered either by the peers or the adult. Though the prompting and reinforcement level may need to be increased during training, the level needs to gradually shift and become more intermittent in order to approximate the level in the natural environment (Cone, Anderson, Harris, Goff, & Fox, 1978). In addition, the use of social reinforcers that are common in nonintervention settings will increase the likelihood of generalization (Lancioni, 1982).

Minimizing Logistical Barriers to Social Inclusion

There are many things that can hinder the establishment of social interactions. These include such thing as scheduling, funding, and travel.

Scheduling. The schedule needs to be flexible. It is often difficult to coordinate the entire family or group's schedule in order to allow time for friends to get together (Heyne, Schleien, & McAvoy, 1993). Yet, flexibility is important to allow opportunities for social interaction and participation in social activities with peers. It is important for schedules to be adjusted so students with disabilities have opportunities to interact with peers without disabilities.

Funding. Many activities, especially those outside of school that are likely to result in opportunities for social inclusion are costly. Joining a community sports league, attending a

movie or concert, eating out all cost money. It is important that strategies are developed so students have ready access to the necessary funds to allow their participation in activities with non-disabled peers.

Travel. Transportation is often a logistical barrier that needs to be solved (Heyne et al., 1993). A person's inability to get to an activity or to a friend's house can limit their opportunities for development and maintenance of social network. Many children are not able to walk to a friend's house due to distance or safety. Many rural areas do not have public transportation and students who use wheelchairs can present new challenges to transportation. This is even a larger barrier when students are not attending their neighborhood school. Children can live in different neighborhoods and need to be driven or use public transportation to get to another's house. This makes it complicated to provide opportunities to recreate together.

Modifying Social Activity Patterns

Assisting and supporting students with disabilities to do activities with peers is an important tool for social inclusion. Several strategies have been developed to build activity patterns into social opportunities. These include both how activities are selected and how they are performed.

Activities that build social inclusion. What a student does will affect who they come in contact with and what types of interactions happen. It is important that teachers select activities that are likely to enhance the social interaction and the development of social relationships. This is accomplished by identifying activities both within the school and the community that peers enjoy, and matching these activities to the interests and skills of the

student with disabilities. Friendships are usually based upon similar interests (Newton et al., 1989). Thus, talking with peers about what they like to do; watching the student with disabilities and identifying their preferences and interests; and working with the coach, leader or facilitator to brainstorm ideas regarding the involvement of the student with disabilities in clubs or sports are strategies for identifying socially inclusive activities.

The types of activities or tasks selected definitely influence whether interactions will take place. Teachers must work to structure activities in a way to enhance the interaction between participants. Joint or group activities, center based activities, cooperative learning, play, fantasy or socio-dramatic activities, or any other non-teacher directed activities have been shown to provide opportunity for interaction and involvement of non-disabled peers (Berstein, 1986; Heyne et al., 1993; Stainback, Stainback, & Jaben, 1981; Tremblay, Strain, Hendrickson, & Shores, 1980).

Lastly, perceptions of competence also influence interactions (Hanline, 1985). Students who are engaging in activities that lead others to perceive them as able are more likely to lead to social interactions. Age appropriate activities or tasks foster social acceptance (Stainback, Stainback, & Hatcher, 1983). Teachers must identify activities that produce a positive and competent image of students with disabilities.

The toys and materials used can also influence others to interact. They may enhance or suppress the effects of instruction and interaction (Martin, Brady, & Williams, 1991; Rogers-Warren & Wedel, 1980). Toys and materials, as with activities, have popularity and social value (Odom & Strain, 1984). Those items with social value can facilitate interactions in a non-intrusive way (Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984; Martin et al., 1991).

These would be toys or materials that many students wish to use or play with for a long period of time. The novelty of a toy or material and its associated age group also can influence its popularity. Teachers must continue to review the materials and items they use as the social value changes as students become older (Odom & Strain, 1984).

Where to participate. Skills should be taught during naturally occurring interactions between students and their peers or students and adults. Teachers need to become skilled at taking advantage of the opportunities that occur naturally throughout a student's day. The natural environment facilitates the acquisition of the skills and the student's ability to respond to the natural cues and consequences in his/her environment (Calculator & Jorgensen, 1991; Falvey, 1986; Neel & Billingsley, 1989). The student needs to have opportunities during and after school to interact with students without disabilities (Stainback, Stainback, & Wilkinson, 1992). A study by Hecimovic and colleagues (Hecimovic et al., 1985) demonstrated that the non-disabled peers in integrated settings initiated up to five times more than handicapped peers in the segregated setting.

Expanding the Capacity and Opportunities in Social Contexts

Physical environment. Though little research or information is available it is anticipated that the physical arrangement of the environment may also influence the social interaction of participants (Odom & Strain, 1984). The close proximity or density of students can influence the level and opportunities for interaction (Egel, Gina, & Koegel, 1981; Fagot, 1977). The seating arrangement also may influence the opportunities for students to interact (Stone & Campbell, 1991). Often students are seated for the convenience of the teacher or assistant - off to the side or in the back of the room. This does not create the same opportunities being

"in the midst" of their peers does (Stone & Campbell, 1991). Students with disabilities need to be positioned so that it is easy for the other students to interact with and "bump" into them. Materials should be displayed so that students can see them and be encouraged to request and comment about them. The restriction of or blocking access to materials or activities can also set the occasion for interactions (Hunt, Goetz, Alwell, & Sailor, 1986). The teacher must work to arrange the environment to encourage interactions. Without an environment that allows and encourages interaction as well as time allotted for this, there will be little interaction.

Peer tutors/special friends. Natural and informal interactions with peers are important. Peers can provide useful and informal information and feedback to the student about what will help them become part of the group, to develop new interests, and develop new skills. Unlike the peer-mediated strategies the purpose of this peer-to-peer teaching is not the direct teaching of social skills but other skills such as academic or community skills (Gaylord-Ross & Pitt-Conway, 1984). Because of the situations and opportunities they present these strategies can improve the frequency, type, and duration of social interactions.

Oftentimes non-disabled peers are used to teach students with disabilities a variety of skills such as academic, leisure community based instruction, etc. (Goldstein & Wickstrom, 1986; Halle, Gabler-Halle, & Bemben, 1989; Kohl, Moses, & Stettner-Easton, 1983). The students without disabilities are taught to deliver the necessary prompts and consequences that would typically be produced by the teacher or other adults. During the teaching of these other skills and activities there are a wide array of opportunities for social interactions and the development of relationships. In other words, these opportunities set the scene for social

interaction though may not have been specifically developed for that reason. Peer tutoring occurs both with students of the same age as well as cross age - older students assisting younger students. One must be careful with this approach as it can also hinder interactions if the structure of the activities becomes only instructional and does not allow for social exchanges.

Voeltz and her colleagues (Voeltz, 1980; 1982; Voeltz et al., 1983) have reported research and development of a strategy known as "special friends". Again, the focus of the program was on participation between students with and without disabilities in leisure activities. Upon completion of an orientation about students with disabilities, students participating in the special friends project were paired with students with disabilities for leisure activities. When the "special friends" were compared with other students' in a school without such a program and with students in segregated schools the attitudes of the "special friends" toward students with disabilities were higher than the other students.

Circles of friends/peer networks. Friendship circles have been found to be a way to build relationships and encourage interactions. A circle or network is formed by bringing together a group of students who are interested in being involved in a student's life (Forest & Lusthaus, 1989; Haring, & Breen, 1992). An adult guides a discussion with the interested students to strategize how to include the student with disabilities within theirs and other's social circles. They continue to meet regularly to identify the barriers, problem solve, advocate and design strategies to include the student with disabilities. The strategy provides opportunities for the student with disabilities to be more fully included into a stable group of friends. It also

provides a peer-mediated problem solving group that function to support and maintain appropriate behaviors necessary for social relationships.

Friends of Clubs. Many students especially those in high school or exiting high school may find that their only supports are their immediate family or paid professionals. Friends of Club is an approach that uses informal activities and supports within a more formal structure to increase the student's social network and thus opportunities for social interaction (McLean & Bert, 1991). Friendships are based upon common interests. This strategy tries to connect individuals with disabilities with others in their extended family or community who may be doing things of interest or of necessity (e.g., getting hair cut).

People form a group, a "club", to plan and share social activities with the student with disabilities. Individuals in the group get together and commit to participate in the preferred or needed activities of the student with disabilities. For example, Mary may enjoy signing and John, a neighbor is a member of the community chorus and agrees to take Mary with him each week. Mary's grandmother goes to the beauty parlor twice a month and commits to taking Mary on one of those occasions. George, her brother, has coffee each Saturday at the local shop and will swing by and pick up Mary on two Saturdays a month. These activities provide the opportunity for Mary to participate on a regular basis in integrated environments and opens opportunities for social interactions, the expansion of her social network and possibly even friendships.

Social guide. A social guide is a person who is responsible for coordinating the activities and logistics to enhance a person's social network and social life. The social guide fulfills many roles such as: a) providing support during initial activities so the non-disabled peer is

comfortable; b) support social reciprocity by helping an student with disability invite others to do things, write letters or make phone calls; c) support the student to participate in activities that may facilitate inclusion; d) provide support for the student to provide personal or community service; or look for opportunities to include the student in their school or community or link them with others.

Summary

This chapter addresses the broad structure for educational strategies that meet the needs of students with severe intellectual disabilities. While other chapters in this book adopt more specific perspectives (e.g. individual curriculum content areas) we have looked at the full curriculum for a diverse and demanding group of students.

Special education is in a critical period for assessing the educational strategies used with students with severe disabilities. These students are now at the door of the regular school and regular classroom. They are asking/demanding to become part of the school reform movement. The real challenge will be to define systems that produce valued instructional gains while supporting the social inclusion that has become a key value in the education of these students. How to educate students with severe disabilities in regular contexts without overburdening the regular teacher, or disrupting the education of regular students is the question of the moment. It seems clear that to achieve the goal (a) new strategies are needed for regular educators, and (b) the strategies for educating students with severe disabilities must be expanded and integrated with those available to regular educators.

Students with severe disabilities come to this problem with a strong foundation in instructional systems and curriculum options grounded in direct instruction, systematic

instructional delivery and data-based outcome measures. Good strategies exist for designing functional curricula that are sequenced to promote rapid, generalized acquisition. What is less available are clear strategies and strategies for organizing the broader variables related to quality education. The strategies we need today are strategies for how students should be grouped, how school-wide systems should be set up, and how funding should be used to achieve the broader educational goals of all students (including those with the most severe disabilities)

We have focused our discussion of educational strategies around a basic set of assumptions related to how schools will be changing in the next 10 years, and around the fundamental vision that students with severe disabilities have the same type of goals as regular students. The way that curricula are developed, instruction delivered, and teaching systems organized will have a major impact on the success of education for students with severe disabilities. In addition, however, careful attention must be paid to the structure of behavioral and social support. Problem behaviors must be addressed with more than a knee jerk reaction. Attention must be paid to understanding the controlling variables and organizing our schools to avoid the development of problem behaviors as well as support adaptive behaviors. Too often the organization of our education is directly related to the maintenance of problem behaviors. Similarly, care must be taken to develop social support rather than assume that the presence of other children will automatically result in effective socialization (Sale & Carey, in press). The range and complexity of educational tools for students with severe disabilities is daunting. The task is clearly greater than a single teacher can manage. Teachers, administrators and families need tools that make effective education more efficient. A central

emphasis for those who design educational tools over the next decade must be to provide tools that allow teachers to efficiently deliver exemplary educational experiences for all students. We believe that as this goal is achieved for regular students it will be apparent that similar strategies will be consistent with the needs of students with severe disabilities.

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